



*Handwritten:* m c-ofc

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re:  
U.S. Patent No: 6,866,024 B2  
  
Inventors: Rizzoni et al.  
  
Issued: March 15, 2005  
  
Serial No.: 10/092,031  
  
Examiner: John T. Kwon  
  
Group Art Unit: 3747  
  
Title: ENGINE CONTROL USING TORQUE ESTIMATION  
  
Docket No.: OSU1159-148B

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

<b>CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8(A)</b>	
	Date of Deposit: <i>April 14, 2005</i>
I hereby certify that this correspondence is being deposited with the U.S. Postal Service with sufficient postage as first-class mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.	
	<i>Trisha M. Beachy</i> Trisha M. Beachy, Paralegal

Sir:

**REQUEST FOR CERTIFICATE OF CORRECTION PURSUANT**  
**TO 37 C.F.R. 1.322**

Transmitted herewith is a Certificate of Correction for the above-identified patent. Upon reviewing the patent, the patentee noted that the following typographical errors were made by the Patent and Trademark Office, which should be corrected as follows:

In column 4, lines 46-54,  
please delete "

$$a_0 \sum 1 + a_1 \sum x_{1,k} + a_2 \sum x_{2,k} + a_3 \sum x_{3,k} + a_4 \sum x_{4,k} = \sum y_{true,k}$$

$$a_0 \sum x_{1,k} + a_1 \sum x_{1,k}^2 + a_2 \sum x_{1,k} x_{2,k} + a_3 \sum x_{1,k} x_{3,k} + a_4 \sum x_{1,k} x_{4,k} = \sum x_{1,k} y_{true,k}$$

$$a_0 \sum x_{2,k} + a_1 \sum x_{1,k} x_{2,k} + a_2 \sum x_{2,k}^2 + a_3 \sum x_{2,k} x_{3,k} + a_4 \sum x_{2,k} x_{4,k} = \sum x_{2,k} y_{true,k}$$

$$a_0 \sum x_{3,k} + a_1 \sum x_{1,k} x_{3,k} + a_2 \sum x_{2,k} x_{3,k} + a_3 \sum x_{3,k}^2 + a_4 \sum x_{3,k} x_{4,k} = \sum x_{3,k} y_{true,k}$$

$$a_0 \sum x_{4,k} + a_1 \sum x_{1,k} x_{4,k} + a_2 \sum x_{2,k} x_{4,k} + a_3 \sum x_{3,k} x_{4,k} + a_4 \sum x_{4,k}^2 = \sum x_{4,k} y_{true,k}$$

and insert --  $a_0 \sum 1 + a_1 \sum x_{1,k} + a_2 \sum x_{2,k} + a_3 \sum x_{3,k} + a_4 \sum x_{4,k} = \sum y_{true,k}$

$$a_0 \sum x_{1,k} + a_1 \sum x_{1,k}^2 + a_2 \sum x_{1,k} x_{2,k} + a_3 \sum x_{1,k} x_{3,k} + a_4 \sum x_{1,k} x_{4,k} = \sum x_{1,k} y_{true,k}$$

$$a_0 \sum x_{2,k} + a_1 \sum x_{1,k} x_{2,k} + a_2 \sum x_{2,k}^2 + a_3 \sum x_{2,k} x_{3,k} + a_4 \sum x_{2,k} x_{4,k} = \sum x_{2,k} y_{true,k}$$

$$a_0 \sum x_{3,k} + a_1 \sum x_{1,k} x_{3,k} + a_2 \sum x_{2,k} x_{3,k} + a_3 \sum x_{3,k}^2 + a_4 \sum x_{3,k} x_{4,k} = \sum x_{3,k} y_{true,k}$$

$$a_0 \sum x_{4,k} + a_1 \sum x_{1,k} x_{4,k} + a_2 \sum x_{2,k} x_{4,k} + a_3 \sum x_{3,k} x_{4,k} + a_4 \sum x_{4,k}^2 = \sum x_{4,k} y_{true,k} \quad \text{--.}$$

In column 7, line 37,

please delete " **Estimated Value =  $F(f_{\theta}, \theta, \theta)$**

(5) "

and insert -- **Estimated Value =  $F(f_{\theta}, \tilde{\theta}, \ddot{\theta})$**  (5) --.

In column 7, line 48,

please delete "

$$P_{estimate} = a_0 + a_1 f_{\theta} + a_2 f_{\theta} \theta + a_3 f_{\theta} \theta + a_4 \theta \theta$$

(6) "

and insert --  $P_{estimate} = a_0 + a_1 f_{\theta} + a_2 f_{\theta} \tilde{\theta} + a_3 f_{\theta} \ddot{\theta} + a_4 \tilde{\theta} \ddot{\theta}$  (6) --.

In column 9, lines 40-61,

please delete "

TABLE 5

Various Basis Functions

Function Number	Basis Function
1	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \ddot{\theta}$
2	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \ddot{\theta} + a_4 \tilde{\theta}^2$
3	$T_{estimate} = a_0 + a_1 f_\theta + a_2 f_\theta \tilde{\theta} + a_3 f_\theta \ddot{\theta} + a_4 \tilde{\theta} \ddot{\theta}$
4	$T_{estimate} = a_0 + a_1 f_\theta + a_2 f_\theta \tilde{\theta} + a_3 f_\theta \ddot{\theta} + a_4 f_\theta \tilde{\theta}^2 + a_5 f_\theta \tilde{\theta} \ddot{\theta} + a_6 \tilde{\theta} \ddot{\theta}^2$
5	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \ddot{\theta} + a_4 f_\theta^2 + a_5 f_\theta \tilde{\theta}^2 + a_6 \ddot{\theta}^2$
6	$T_{estimate} = a_0 + a_1 f_\theta + a_2 f_\theta \tilde{\theta} + a_3 f_\theta \ddot{\theta} + a_4 \tilde{\theta}^2 + a_5 \tilde{\theta} \ddot{\theta} + a_6 \ddot{\theta}^2$
7	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \ddot{\theta} + a_4 f_\theta^2 + a_5 f_\theta \tilde{\theta} + a_6 f_\theta \ddot{\theta} + a_7 \tilde{\theta}^2 + a_8 \tilde{\theta} \ddot{\theta} + a_9 \ddot{\theta}^2$

and insert – Table 5. Various Basis Functions

Function Number	Basis Function
1	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \ddot{\theta}$
2	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \ddot{\theta} + a_4 \tilde{\theta}^2$
3	$T_{estimate} = a_0 + a_1 f_\theta + a_2 f_\theta \tilde{\theta} + a_3 f_\theta \ddot{\theta} + a_4 \tilde{\theta} \ddot{\theta}$
4	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \ddot{\theta} + a_4 f_\theta \tilde{\theta} + a_5 f_\theta \ddot{\theta} + a_6 \tilde{\theta} \ddot{\theta}$
5	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \ddot{\theta} + a_4 f_\theta^2 + a_5 \tilde{\theta}^2 + a_6 \ddot{\theta}^2$
6	$T_{estimate} = a_0 + a_1 f_\theta + a_2 f_\theta \tilde{\theta} + a_3 f_\theta \ddot{\theta} + a_4 \tilde{\theta}^2 + a_5 \tilde{\theta} \ddot{\theta} + a_6 \ddot{\theta}^2$
7	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \ddot{\theta} + a_4 f_\theta^2 + a_5 f_\theta \tilde{\theta} + a_6 f_\theta \ddot{\theta} + a_7 \tilde{\theta}^2 + a_8 \tilde{\theta} \ddot{\theta} + a_9 \ddot{\theta}^2$

In column 13, lines 26-44,

please delete "

TABLE 6

Various Sub-Basis Functions	
Function Number	Sub-Basis Function
1	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq$
2	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq$
3	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm^2 + b_{4,i} \cdot ltq^2$
4	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2$
5	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2 + b_{6,i} \cdot rpm^2 \cdot ltq^2$
6	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2 + b_{6,i} \cdot rpm^2 \cdot ltq + b_{7,i} \cdot rpm \cdot ltq^2 + b_{8,i} \cdot rpm^2 \cdot ltq^2$
7	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_s$
8	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_s + b_{4,i} \cdot rpm \cdot \theta_s + b_{5,i} \cdot ltq \cdot \theta_s$
9	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_s + b_{4,i} \cdot rpm \cdot \theta_s + b_{5,i} \cdot ltq \cdot \theta_s + b_{6,i} \cdot \theta_s^2 + b_{7,i} \cdot rpm \cdot \theta_s^2 + b_{8,i} \cdot ltq^2 \cdot \theta_s^2$

and insert -- Table 6. Various Sub-Basis Functions

Function Number	Sub-Basis Function
1	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq$
2	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq$
3	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm^2 + b_{4,i} \cdot ltq^2$
4	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2$
5	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2 + b_{6,i} \cdot rpm^2 \cdot ltq^2$
6	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2 + b_{6,i} \cdot rpm^2 \cdot ltq + b_{7,i} \cdot rpm \cdot ltq^2 + b_{8,i} \cdot rpm^2 \cdot ltq^2$
7	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_s$

8	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq$ $+ b_{3,i} \cdot \theta_s + b_{4,i} \cdot rpm \cdot \theta_s + b_{5,i} \cdot ltq \cdot \theta_s$
9	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_s$ $+ b_{4,i} \cdot rpm \cdot \theta_s + b_{5,i} \cdot ltq \cdot \theta_s + b_{6,i} \cdot \theta_s^2$ $+ b_{7,i} \cdot rpm \cdot \theta_s^2 + b_{8,i} \cdot ltq^2 \cdot \theta_s^2$

In column 13, lines 51-53,

please delete " 
$$\varepsilon = \min_{b_{ji}} \left( \sum_{i=1}^N (a_{trained,i} - a_{estimated,i})^2 \right) \quad (23) "$$

and insert -- 
$$\varepsilon = \min_{b_{j,i}} \left( \sum_{i=1}^N (a_{trained,i} - a_{estimated,i})^2 \right) \quad (23) --$$

A review of the Application as submitted and thereafter as amended, confirms that the errors were made in the printing of the patent.

Since the above noted errors for which a Certificate of Correction is sought were a result of Patent Office mistake, no fee is due (35 U.S.C. § 254). Approval of the Certificate of Correction respectfully is solicited.

Respectfully submitted,

Date: April 14, 2005

By: Carol G. Stovsky  
Carol G. Stovsky  
Registration No. 42,171  
Standley Law Group LLP  
495 Metro Place South, Suite 210  
Dublin, Ohio 43017-5315  
Telephone: 614/792-5555  
Facsimile: 614/792-5536

# UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO : 6,866,024 B2  
DATED : March 15, 2005  
INVENTOR(S) : Rizzoni et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 4, lines 46-54,  
please delete "

$$a_0 \Sigma 1 + a_1 \Sigma x_{1,k} + a_2 \Sigma x_{2,k} + a_3 \Sigma x_{3,k} + a_4 \Sigma x_{4,k} = \Sigma y_{true,k}$$

$$a_0 \Sigma x_{1,k} + a_1 \Sigma x_{1,k}^2 + a_2 \Sigma x_{1,k} x_{2,k} + a_3 \Sigma x_{1,k} x_{3,k} + a_4 \Sigma x_{1,k} x_{4,k} = \Sigma x_{1,k} y_{true,k}$$

$$a_0 \Sigma x_{2,k} + a_1 \Sigma x_{1,k} x_{2,k} + a_2 \Sigma x_{2,k}^2 + a_3 \Sigma x_{2,k} x_{3,k} + a_4 \Sigma x_{2,k} x_{4,k} = \Sigma x_{2,k} y_{true,k}$$

$$a_0 \Sigma x_{3,k} + a_1 \Sigma x_{1,k} x_{3,k} + a_2 \Sigma x_{2,k} x_{3,k} + a_3 \Sigma x_{3,k}^2 + a_4 \Sigma x_{4,k} x_{3,k} = \Sigma x_{3,k} y_{true,k}$$

$$a_0 \Sigma x_{4,k} + a_1 \Sigma x_{1,k} x_{4,k} + a_2 \Sigma x_{2,k} x_{4,k} + a_3 \Sigma x_{3,k} x_{4,k} + a_4 \Sigma x_{4,k}^2 = \Sigma x_{4,k} y_{true,k}$$

and insert --  $a_0 \Sigma 1 + a_1 \Sigma x_{1,k} + a_2 \Sigma x_{2,k} + a_3 \Sigma x_{3,k} + a_4 \Sigma x_{4,k} = \Sigma y_{true,k}$

$$a_0 \Sigma x_{1,k} + a_1 \Sigma x_{1,k}^2 + a_2 \Sigma x_{1,k} x_{2,k} + a_3 \Sigma x_{1,k} x_{3,k} + a_4 \Sigma x_{1,k} x_{4,k} = \Sigma x_{1,k} y_{true,k}$$

$$a_0 \Sigma x_{2,k} + a_1 \Sigma x_{1,k} x_{2,k} + a_2 \Sigma x_{2,k}^2 + a_3 \Sigma x_{2,k} x_{3,k} + a_4 \Sigma x_{2,k} x_{4,k} = \Sigma x_{2,k} y_{true,k}$$

$$a_0 \Sigma x_{3,k} + a_1 \Sigma x_{1,k} x_{3,k} + a_2 \Sigma x_{2,k} x_{3,k} + a_3 \Sigma x_{3,k}^2 + a_4 \Sigma x_{4,k} x_{3,k} = \Sigma x_{3,k} y_{true,k}$$

$$a_0 \Sigma x_{4,k} + a_1 \Sigma x_{1,k} x_{4,k} + a_2 \Sigma x_{2,k} x_{4,k} + a_3 \Sigma x_{3,k} x_{4,k} + a_4 \Sigma x_{4,k}^2 = \Sigma x_{4,k} y_{true,k} \quad --.$$

## MAILING ADDRESS OF SENDER:

Carol G. Stovsky  
Standley Law Group LLP  
495 Metro Place South  
Suite 210  
Dublin, OH 43017-5319

PATENT NO. 6,866,024 B2

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This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: *Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.*

## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

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 DATED : March 15, 2005  
 INVENTOR(S) : Rizzoni et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 7, line 37,

please delete "  $\text{Estimated Value} = F(f_{\theta}, \theta, \theta)$  " (5)

and insert --  $\text{Estimated Value} = F(f_{\theta}, \tilde{\theta}, \ddot{\theta})$  (5) --.

In column 7, line 48,

please delete "  $P_{\text{estimate}} = a_0 + a_1 f_{\theta} + a_2 f_{\theta} \theta + a_3 f_{\theta} \theta + a_4 \theta \theta$  " (6)

and insert --  $P_{\text{estimate}} = a_0 + a_1 f_{\theta} + a_2 f_{\theta} \tilde{\theta} + a_3 f_{\theta} \ddot{\theta} + a_4 \tilde{\theta} \ddot{\theta}$  (6) --.

### MAILING ADDRESS OF SENDER:

Carol G. Stovsky  
 Standley Law Group LLP  
 495 Metro Place South  
 Suite 210  
 Dublin, OH 43017-5319

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In column 9, lines 40-61,

TABLE 5

please delete "

Various Basis Functions

Function Number	Basis Function
1	$T_{estimate} = a_0 + a_1 f_{\theta} + a_2 \tilde{\theta} + a_3 \theta$
2	$T_{estimate} = a_0 + a_1 f_{\theta} + a_2 \tilde{\theta} + a_3 \theta + a_4 \tilde{\theta}^2$
3	$T_{estimate} = a_0 + a_1 f_{\theta} + a_2 f_{\theta} \tilde{\theta} + a_3 f_{\theta} \theta + a_4 \tilde{\theta} \theta$
4	$T_{estimate} = a_0 + a_1 f_{\theta} + a_2 f_{\theta} \tilde{\theta} + a_3 f_{\theta} \theta + a_4 f_{\theta} \tilde{\theta}^2 + a_5 f_{\theta} \theta^2 + a_6 \tilde{\theta} \theta$
5	$T_{estimate} = a_0 + a_1 f_{\theta} + a_2 \tilde{\theta} + a_3 \theta + a_4 f_{\theta}^2 + a_5 f_{\theta} \tilde{\theta}^2 + a_6 \theta^2$
6	$T_{estimate} = a_0 + a_1 f_{\theta} + a_2 f_{\theta} \tilde{\theta} + a_3 f_{\theta} \theta + a_4 \tilde{\theta}^2 + a_5 \tilde{\theta} \theta + a_6 \theta^2$
7	$T_{estimate} = a_0 + a_1 f_{\theta} + a_2 \tilde{\theta} + a_3 \theta + a_4 f_{\theta}^2 + a_5 f_{\theta} \tilde{\theta} + a_6 f_{\theta} \theta + a_7 \tilde{\theta}^2 + a_8 \tilde{\theta} \theta + a_9 \theta^2$

MAILING ADDRESS OF SENDER:

Carol G. Stovsky  
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Suite 210  
Dublin, OH 43017-5319

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and insert -- Table 5. Various Basis Functions

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2	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \ddot{\theta} + a_4 \tilde{\theta}^2$
3	$T_{estimate} = a_0 + a_1 f_\theta + a_2 f_\theta \tilde{\theta} + a_3 f_\theta \ddot{\theta} + a_4 \tilde{\theta} \ddot{\theta}$
4	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \ddot{\theta} + a_4 f_\theta \tilde{\theta} + a_5 f_\theta \ddot{\theta} + a_6 \tilde{\theta} \ddot{\theta}$
5	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \ddot{\theta} + a_4 f_\theta^2 + a_5 \tilde{\theta}^2 + a_6 \ddot{\theta}^2$
6	$T_{estimate} = a_0 + a_1 f_\theta + a_2 f_\theta \tilde{\theta} + a_3 f_\theta \ddot{\theta} + a_4 \tilde{\theta}^2 + a_5 \tilde{\theta} \ddot{\theta} + a_6 \ddot{\theta}^2$
7	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \ddot{\theta} + a_4 f_\theta^2 + a_5 f_\theta \tilde{\theta} + a_6 f_\theta \ddot{\theta} + a_7 \tilde{\theta}^2 + a_8 \tilde{\theta} \ddot{\theta} + a_9 \ddot{\theta}^2$

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## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO : 6,866,024 B2

DATED : March 15, 2005

INVENTOR(S) : Rizzoni et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 13, lines 26-44,

please delete "

TABLE 6

Various Sub-Basis Functions

Function Number	Sub-Basis Function
1	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq$
2	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq$
3	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm^2 + b_{4,i} \cdot ltq^2$
4	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2$
5	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2 + b_{6,i} \cdot rpm^2 \cdot ltq^2$
6	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2 + b_{6,i} \cdot rpm^2 \cdot ltq + b_{7,i} \cdot rpm \cdot ltq^2 + b_{8,i} \cdot rpm^2 \cdot ltq^2$
7	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_i$
8	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_i + b_{4,i} \cdot rpm \cdot \theta_i + b_{5,i} \cdot ltq \cdot \theta_i$
9	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_i + b_{4,i} \cdot rpm \cdot \theta_i + b_{5,i} \cdot ltq \cdot \theta_i + b_{6,i} \cdot \theta_i^2 + b_{7,i} \cdot rpm \cdot \theta_i^2 + b_{8,i} \cdot ltq^2 \cdot \theta_i^2$

## MAILING ADDRESS OF SENDER:

Carol G. Stovsky  
Standley Law Group LLP  
495 Metro Place South  
Suite 210  
Dublin, OH 43017-5319

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 and insert – Table 6. Various Sub-Basis Functions

Function Number	Sub-Basis Function
1	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq$
2	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq$
3	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm^2 + b_{4,i} \cdot ltq^2$
4	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2$
5	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2 + b_{6,i} \cdot rpm^2 \cdot ltq^2$
6	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2 + b_{6,i} \cdot rpm^2 \cdot ltq + b_{7,i} \cdot rpm \cdot ltq^2 + b_{8,i} \cdot rpm^2 \cdot ltq^2$
7	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_s$
8	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_s + b_{4,i} \cdot rpm \cdot \theta_s + b_{5,i} \cdot ltq \cdot \theta_s$
9	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_s + b_{4,i} \cdot rpm \cdot \theta_s + b_{5,i} \cdot ltq \cdot \theta_s + b_{6,i} \cdot \theta_s^2 + b_{7,i} \cdot rpm \cdot \theta_s^2 + b_{8,i} \cdot ltq^2 \cdot \theta_s^2$

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In column 13, lines 51-53,

please delete " 
$$\varepsilon = \min_{b_{ji}} \left( \sum_{i=1}^N (a_{\text{trained},i} - a_{\text{estimated},i})^2 \right) \quad (23) "$$

and insert -- 
$$\varepsilon = \min_{b_{j,i}} \left( \sum_{i=1}^N (a_{\text{trained},i} - a_{\text{estimated},i})^2 \right) \quad (23) --$$

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